

ECONQUEST

Core Inflation Measures

December 2025

TEACHER GUIDE

Topic - How Inflation Is Measured: Are Changes Justified?

Article - [Is It Time to Add Food-at-Home Inflation to Measures of Core Inflation?](#)

Since the mid-1970s, the Federal Reserve has used core inflation to examine trends in underlying inflation. Core inflation is considered a more stable measure as it excludes energy and food, historically viewed as the most volatile components of inflation. However, core inflation can be a challenge for central bankers to communicate, as food inflation is highly salient to consumers. We argue that food-at-home inflation has become less volatile over time and could be added to measures of core inflation with few drawbacks.

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Overview:

For several decades the Federal Reserve has worked to understand how prices shift over time. This includes the study of inflation, a general and sustained upward movement of prices. One measure used to gauge inflation is the consumer price index (CPI), which shows average variations in prices of a select group of goods and services over time. Core CPI is the same measurement excluding food and energy because of their historical price volatility. However, recent studies conducted by the Federal Reserve Bank of Kansas City suggest that the cost of food has not changed dramatically compared to other goods and services more recently and therefore should remain within core inflation measures.

Glossary:

- **Consumer Price Index (CPI)** - shows an average change over time in prices paid by consumers for a selected group of goods and services.
- **Core Consumer Price Index (CPI)** - shows an average change over time in prices paid by consumers for a selected group of goods and services without the inclusion of food or energy
- **Federal Reserve** - the central bank of the United States
- **Goods** – objects that can satisfy people’s wants
- **Inflation** - a general and sustained upward movement of prices for goods and services in an economy
- **Price stability** - a low and stable rate of inflation maintained over an extended period.
- **Services** – activities that can satisfy people’s wants

Answer keys for each student activity are provided where applicable.

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Quiz Quest Key:

Students respond to the following questions after reading the research article.

1. *CPI stands for Consumer Price Index.*
2. *(CPI) measures the average change over time in prices paid by consumers for a selected group of goods and services. The Core Consumer Price Index (CPI) differs from the regular CPI by excluding food and energy prices.*
3. *Inflation is a general and sustained upward movement of prices for goods and services in an economy.*
4. *Inflation targeting is where central banks communicate an objective for inflation and use policy tools to achieve that objective.*
5. *The Federal Reserve uses the Personal Consumption Expenditures (PCE) price deflator to communicate its inflation target objective.*
6. *Food and energy prices were excluded from core inflation in the past due to their tendency to have large, temporary price shifts.*
7. *Between 1990 and 2019, food-at-home inflation averaged around 2 percent, nondurable goods inflation averaged around zero, and energy inflation averaged around 3 percent.*
8. *The effect of food prices has been reduced due to advancements in the food industry.*
9. *According to Chart 2, packing and processing impact almost 30 cents of each dollar spent on food, and more than 40 cents is caused by transportation, wholesale, and retail trade.*
10. *Since the 1970s, the volatility of food-at-home inflation has fallen considerably compared to nondurable goods and energy.*

Video Quest Key:

Students watch a short [video](#) (4:57 minutes) about inflation and summarize what they learned in 3-5 bullet points, including proper use of the terms **inflation**, **CPI** and **price stability**.

Video link: www.federalreserveeducation.org/teaching-resources/economics/inflation/inflation

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Visualization Quest Key:

Students use the instructions provided to access BLS data about historical prices for CPI-related goods and chart what they find. Then, they write a 3-5 sentence description to accompany their chart that summarizes price fluctuations over time and how price increases compare/contrast across items. Students should also include their thoughts on whether their chart indicates a period of inflation based on price changes.

Instructions for students to retrieve data:

- Go to the U.S. Bureau of Labor Statistics site at www.bls.gov/data/.
- Click the tab **Data Tools** and select **Data Retrieval Tools** from the drop-down menu.
- Select **Top Picks** from the options available.
- Scroll down to the **Inflation & Prices** section.
- Under the column titled **Database Name**, find the row named **Average Price Data (Consumer Price Index – CPI)**.
- On that same row, look to the right for the option called **Top Picks** and click that link.
- From the available list of goods, select 5 of your choice.
- Click **Retrieve data**.
- Near the top of the page, find **Change Output Options**.
- To the right of that label, use the **From** drop-down menu to select the year 1980 and then use the **To** drop-down menu to select the current year.
- Click the **Go** button to the right.
- You should now see a separate table of data for each product you selected that includes an average price for that item every month from 1980 to the present.
- Of the years in each data table, select three to include in your bar/line graph, with one year during the 1980's, one year in the early 2000's and the last being the current year.
- For the three years selected, calculate the average price of each item during those years. (determine the average by adding together the price listed for every month of one year, then dividing that sum by the total number of months that have price data, noting that the current year may not have price data yet for all twelve months).
- Use the data you have calculated to create a graph that shows the average price for each of the five items for all three years you selected. Be sure to include:
 - A title for your chart/graph
 - The three years you selected on the X-axis
 - The range of average prices you calculated on the Y-axis
 - The five goods you chose, each represented by a different color line or bar
 - Labels for the years, prices and item names

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Visualization Quest Key Continued:

Answers will vary, but should include a bar/line graph and a short summary with the following:

- A title
 - Three years on the X-axis (one in the 1980's, one in the early 2000's and the current year)
 - Average prices on the Y-axis
 - Five different goods, each represented by a different color line or bar
 - Labels for the years, prices and items
 - A 3-5 sentence description that summarizes the price fluctuations shown over time and how the price increases compare/contrast across items, as well as the student's thoughts on whether the chart indicates a period of inflation based on the degree to which prices changed.
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Imagination Quest Key:

Students work in pairs to review the scenarios provided and then brainstorm what the impact of each one might have on consumer prices. A table is provided for them to record their thoughts. Students are also asked to be prepared to share their ideas with the class.

Answers will vary, but may include:

Scenario 1 - A prolonged period of storms and rain have caused crops to flood. What might this mean for crop prices?

Potential Impact - Crop prices would likely increase because viable crops would be limited, less than the demand

Scenario 2 - Severe supply chain issues have slowed the production of new smart home appliances. What could this mean for smart home appliance prices?

Potential Impact - Smart home appliance prices will likely go up while supplies are limited

Scenario 3 - Artificial intelligence has helped shipping companies deliver more products faster. How might this impact the cost of delivery services?

Potential Impact - Delivery services would be able to lower their prices if their costs were less, but if their costs increased due to more gas usage, etc., they might increase their prices to help offset their expenses

Scenario 4 - Trade routes for oil distribution have improved, but local storage facilities are limited in how much they can store. What could this do to gas prices?

Potential Impact - Gas prices might decrease as distributors tried to reduce their supply or because more gas would be available for consumers to purchase

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Debate Quest Key:

In small collaborative groups, students review the question provided and determine arguments for and against, including their rationale and proper use of at least two economic terms from the article.

Answers will vary but should include an argument for and against the question below, as well as the rationale for each argument and correct usage of at least two economic terms from the glossary.

Question: *Is 2 percent inflation a good target for a healthy economy? Why and why not?*



Is It Time to Add Food-at-Home Inflation to Measures of Core Inflation?

By Francisco Scott, José Mustre-del-Río, Amaze Lusompa, and Jalen Nichols

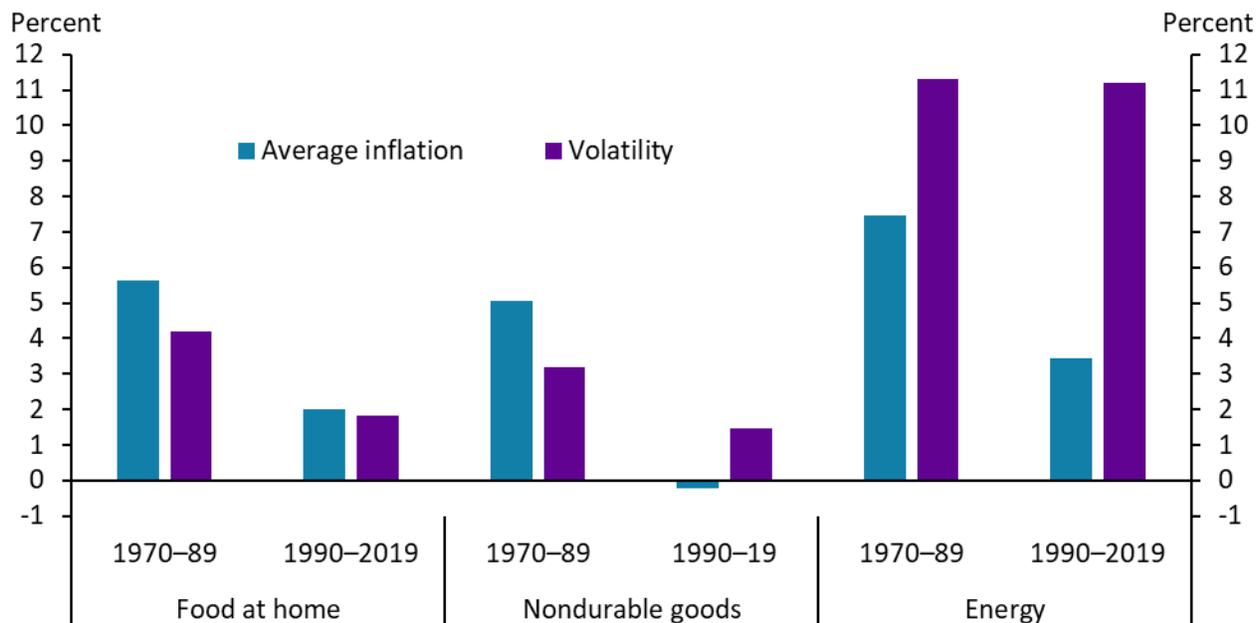
Since the mid-1970s, the Federal Reserve has used core inflation to examine trends in underlying inflation. Core inflation is considered a more stable measure as it excludes energy and food, historically viewed as the most volatile components of inflation. However, core inflation can be a challenge for central bankers to communicate, as food inflation is highly salient to consumers. We argue that food-at-home inflation has become less volatile over time and could be added to measures of core inflation with few drawbacks.

Central banks around the world have moved toward monetary policy frameworks that employ inflation-targeting—that is, communicating an objective for inflation, then setting policy to achieve that objective. Through inflation-targeting, policymakers hope to increase transparency around their actions and keep inflation expectations anchored. In the United States, the Federal Reserve communicates its inflation objective in terms of the Personal Consumption Expenditures (PCE) price deflator, which is the price of all final goods in the economy.

Although the Federal Reserve’s inflation objective is for overall, or headline, inflation, public communications often refer to core inflation, which excludes prices for food at home and energy. Policymakers have used this measure of core inflation since the 1970s, as historically, food and energy prices have been susceptible to large, temporary price changes that are unlikely to be related to underlying trend inflation.¹ However, communicating about core inflation can be challenging for central banks, as food prices are particularly salient to consumers. As several decades have passed since the Fed began using core inflation in its communications, are the reasons for excluding food prices still relevant?

Chart 1 shows that while food-at-home inflation was more volatile in the 1970s and 1980s, in recent years, food-at-home inflation has been less volatile than energy inflation and no more volatile than many nondurable goods included in core inflation.² Between 1970 and 1989, food-at-home inflation averaged about 6 percent annually (blue bar) and varied widely around this average by around 4 percentage points (purple bar). Nondurable goods inflation was similarly high but less volatile, varying by 3 percentage points around its average. Energy inflation was higher and more volatile than the other two categories, averaging over 7 percent and fluctuating 11 percentage points around this average. Since 1990, however, inflation and volatility have declined for both food and nondurable goods. Between 1990 and 2019, food-at-home inflation averaged around 2 percent and varied by 2 percentage points around this average. Nondurable goods inflation averaged near zero but also varied by 2 percentage points around this average. Although energy inflation also fell during this period to an average of 3 percent, its variability stayed high at 11 percentage points. Overall, the chart shows that the volatility of food-at-home inflation has fallen relative to nondurable goods and energy and now appears to be only as volatile as the key components of core inflation.

Chart 1: Food-at-home inflation has been as volatile as other components included in core inflation since 1990



Notes: Nondurable goods include cleaning and personal care products and recreational goods such as games and hobby products. We end our sample in 2019 to avoid pandemic effects, though including the pandemic period leads to qualitatively similar conclusions.

Sources: U.S. Bureau of Economic Analysis (Haver Analytics) and authors’ calculations.

Even with this decline in volatility, policymakers may still not wish to include food-at-home inflation in core inflation if movements in food prices are driven by temporary changes in agricultural commodity prices due to weather events (such as drought or flooding) instead of factors affecting the broader economy. Indeed, some evidence suggests that these types of events affected food prices and inflation in the 1970s (Blinder 1982). However, the effect of commodity prices on retail food prices has declined in recent decades as the food industry has evolved. Chart 2 shows that for each dollar consumers spent on food over the 2000–23 period, almost 30 cents can be attributed to the packing and processing industry, and more than 40 cents can be attributed to transportation, wholesale, and retail trade. Only 15 cents can be attributed to farm production and agribusiness, which are activities more tied to agricultural commodity prices. Moreover, Scott, Cowley, and Kreitman (2023) argue that food-at-home inflation during the pandemic was largely driven by labor constraints, while Scott and others (2024) show that the agricultural commodity prices passthrough to food-at-home prices is small, likely because these changes are absorbed by firms along the supply chain.³ In other words, food prices today are less affected by factors particular to the agriculture industry than in past decades, suggesting that this reason for excluding food at home from core inflation has become less salient.

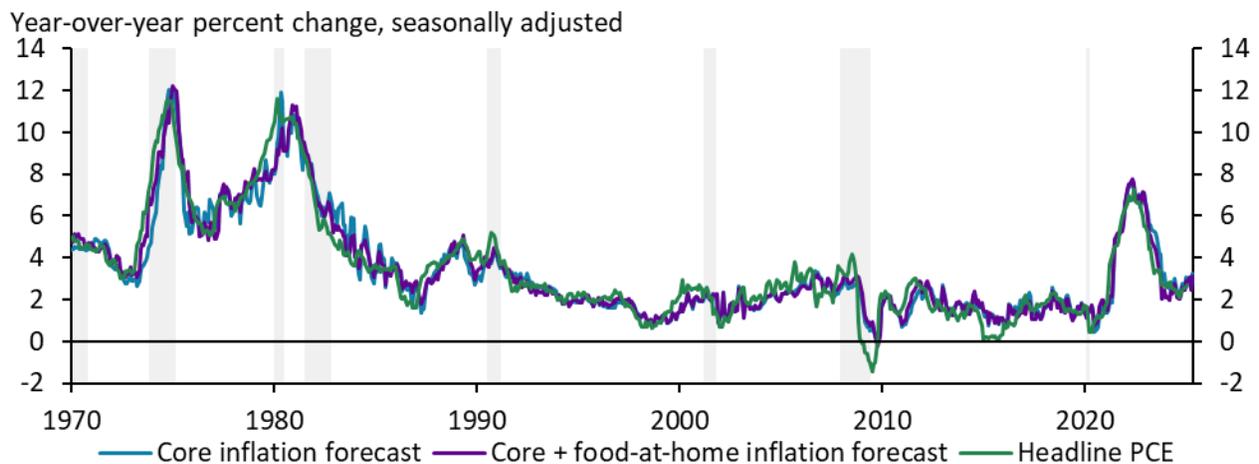
Chart 2: Farm production consists of a small share of the cost for food at home



Note: Chart depicts the average of each category using data from 2000 to 2023.
Source: USDA.

Additionally, we find little evidence that including food-at-home prices in measures of core inflation reduces its ability to predict future headline inflation. Chart 3 presents rolling-window forecasts using either core inflation or core inflation plus food-at-home inflation to predict headline inflation three months in the future. Both lines overlap for most of the sample period, highlighting that neither performs consistently better than the other in forecasting headline inflation. This pattern holds when we forecast over longer horizons (for example, six to 12 months ahead), suggesting the core + food inflation measure is suitable for near- and medium-term inflation forecasting. These results are consistent with prior evidence that excluding *only* energy from measures of inflation is sufficient to adequately forecast future headline inflation.⁴

Chart 3: Forecasts of headline inflation using core inflation and core plus food-at-home inflation look remarkably similar



Note: Chart depicts three-month-ahead forecasts. Gray bars indicate National Bureau of Economic Research (NBER)-defined recessions.
Sources: U.S. Bureau of Economic Analysis and NBER (both accessed via Haver Analytics); authors' calculations.

Overall, many of the drawbacks of including food inflation in measures of core inflation appear to have diminished since the 1970s. Food-at-home inflation is now no more volatile than many subcomponents of core inflation and increasingly responds to the same factors that affect the prices of other items included in core inflation. Most crucially, measures of inflation that incorporate food-at-home inflation perform just as well as traditional measures of core inflation in forecasting headline inflation. Including measures of food-at-home inflation in core inflation may therefore help policymakers better assess the underlying inflationary forces in the economy without omitting prices that are particularly salient to consumers.

Endnotes

¹ The Federal Reserve Board staff has produced a staff forecast document since June 1964. From the start, staff provided a separate discussion of food price inflation and included a decomposition of inflation into food, goods excluding food, and services. In February 1975, the staff forecast started to regularly report a measure of inflation excluding food and energy prices.

² We construct a measure of nondurable goods so that by the early 2020s, its expenditure share is similar to food at home, making them comparable for our analysis.

³ Disruptions that severely constrain the availability of agricultural products tend to increase food-at-home prices, particularly for products whose degree of processing is very low, like eggs. However, products that require a high degree of processing, like beef, can experience extended periods of supply constraints without any significant passthrough to food-at-home prices. For example, inventories of cattle have been low for the last three years, and although beef prices have put some upward pressure on inflation for meats, overall food inflation has not moved much.

⁴ See, for example, Clark (2001), Detmeister (2011), and McCracken and Ngan (2023).

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